Investigating Opinion Dynamics using the FreqNet model

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Abstract

Human life is based on social interactions. These interactions are dictated by the attitudes and beliefs people have. Personal attitudes and beliefs are not constant over time but are influenced on an individual level. The interactions with friends, coworkers and others can influence one?s opinion. Such an attitude change can occur during discussions. It is hypothesised that these changes are such that when two individuals meet, the closer their opinions are, the more likely their opinions converge, Sherif and Hovland (year). On the other hand, when they differ a lot from each other they will experience contrasting opinion, and as a result diverge opinions, resulting in a polarisation.

Extending earlier research, Jager and Amblard (2008) have introduced the FreqNet model as a formalisation of dynamic relationships. This model is a two-dimensional opinion dynamics model that is based on human similarity and includes the frequency of contact. In this model the social network of contacts is evaluated. The social ties are all weighted according to the similarity of the agents. Apart from their attitudes, individuals differ only on how important they find the attitudes. First experiments indicated that if people connect based on similarity of attitudes, the tendency towards polarisation becomes stronger. Jager and Amblard (2008) found that attitudinal processes have a serious impact on the resulting network characteristics.

In this presentation we shall elaborate upon several open questions concerning the FreqNet model. First, large series of experiments need to be done to shed light on the characteristics of the agents and their interactions. It is of interest to investigate which type of people interact with each other and if they are more similar then others. It is possible that these behavioural patterns are not constant over time. Changes in these patterns could be predictors of group behaviour.

The investigation of these question can shed some light on important issues regarding opinion shifts. Possible, we can find some markers that are predictors for opinion shifts. It could, for instance, be interesting to predict polarisation. These markers could be on an individual level. The characteristics of the agents may very well relate to the changes of position in the network. If possible, agents

can be identified that responsible for behavioural changes. The characteristics of these leaders are of interest, for example there position in the network, their attitude in the beginning.

The ultimate goal is to let agents shape their own network based on their attitudes and behavioural processes. Inclusion of the dynamics of social networks will make the model even more realistic. With this improvement emergence of social networks can be studied as well.

In finding answers to our questions recently developed statistical methods shall be used that have the ability to deal with time varying networks and ties that have variable strengths (Karsai et al. 2014).

To validate FreqNet empiracal data will be used. As a consequence of gas mining earthquakes are measured more strongly and more often in the northern parts of the Netherlands. The changes of opions on gas mining in this region form a good studyground for opinion dynamics. Therefore, behavioural data on this topic will be used in validating the FreqNet model.

References

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